

Cassini discovers two new moons

By Carolina Martinez



This image is from an animation showing the orbit of S/2004 S2 as it makes its way around Saturn. To view the animation, visit <http://photojournal.jpl.nasa.gov/catalog/PLA06106>.

With eyes sharper than any that have peered at Saturn before, the Cassini spacecraft has uncovered two moons that may be the smallest bodies so far seen around the ringed planet. The moons are approximately 3 kilometers (2 miles) and 4 kilometers (2.5 miles) across—smaller than the city of Boulder, Colo. The moons, located 194,000 kilometers (120,000 miles) and 211,000 kilometers (131,000 miles) from the planet’s center, are between the orbits of two other saturnian moons, Mimas and Enceladus. They are provisionally named S/2004 S1 and S/2004 S2. One of them, S/2004 S1, may be an object spotted in a single image taken by JPL’s Voyager spacecraft 23 years ago, called at that time S/1981 S14.

“One of our major objectives in returning to Saturn was to survey the entire system for new bodies,” said Dr. Carolyn Porco, imaging team leader, Space Science Institute, Boulder, Colo. Porco planned the imaging sequences. “So, it’s really gratifying to know that among all the other fantastic discoveries we will make over the next four years, we can now add the confirmation of two new moons, skipping

unnoticed around Saturn for billions of years until just now.” The moons were first seen by Dr. Sebastien Charnoz, a planetary dynamicist working with Dr. Andre Brahic, imaging team member at the University of Paris. “Discovering these faint satellites was an exciting experience, especially the feeling of being the first person to see a new body of our solar system,” said Charnoz. “I had looked for such objects for weeks while at my office in Paris, but it was only once on holiday, using my laptop, that my code eventually detected them. This tells me I should take more holidays.”

The smallest previously known moons around Saturn are about 20 kilometers (12 miles) across. Scientists expected that moons as small as S/2004 S1 and S/2004 S2 might be found within gaps in the rings and perhaps near the F ring, so they were surprised these small bodies are between two major moons. Small comets careening around the outer solar system would be expected to collide with small moons and break them to bits. The fact that these moons exist where they do might provide limits on the number of small comets in the outer solar system, a quantity essential for understanding the Kuiper Belt of comets beyond Neptune, and the cratering histories of the moons of the giant planets.

“A comet striking an inner moon of Saturn moves many times faster than a speeding bullet,” said Dr. Luke Dones, an imaging team member from the Southwest Research Institute, Boulder, Colo. “If small, house-sized comets are common, these moons should have been blown apart many times by cometary impacts during the history of the solar system. The disrupted moon would form a ring, and then most of the material would eventually gather back together into a moon. However, if small comets are rare, as they seem to be in the Jupiter system, the new moons might have survived since the early days of the solar system.”

Moons surrounding the giant planets generally are not found where they originally formed because tidal forces from the planet can cause them to drift from their original locations. In drifting, they may sweep through locations where other moons disturb them, making their orbits eccentric or inclined relative to the planet’s equator. One of the new moons might have undergone such an evolution.

Upcoming imaging sequences will scour the gaps in Saturn’s rings in search of moons believed to be there. Meanwhile, Cassini scientists are eager to get a closer look, if at all possible, at their new finds. Porco said, “We are at this very moment looking to see what the best times are for retargeting. Hopefully, we haven’t seen the last of them.”

The Cassini-Huygens mission is a cooperative project of NASA, the European Space Agency and the Italian Space Agency. JPL manages the mission for NASA’s Science Mission Directorate. For images and information about the mission, visit <http://saturn.jpl.nasa.gov> and <http://www.nasa.gov/cassini>. Images are also available at the Cassini imaging team home page, <http://ciclops.org>.

Gusev Crater bedrock hints at watery past

By Guy Webster

Now that JPL’s Mars Exploration Rover Spirit is finally examining bedrock in the “Columbia Hills,” it is finding evidence that water thoroughly altered some rocks in Mars’ Gusev Crater.

Spirit and its twin, Opportunity, completed successful three-month primary missions in April and are returning bonus results during extended missions. They remain in good health though beginning to show signs of wear.

On Opportunity, a tool for exposing the insides of rocks stopped working on Aug. 15, but engineers are optimistic that the most likely diagnosis is a problem that can be fixed soon. “It looks like there’s a pebble trapped between the cutting heads of the rock abrasion tool,” said Chris Salvo, the rover mission manager at JPL. “We think we can treat it by turning the heads in reverse, but we are still evaluating the best approach to remedy the situation.”

It took Spirit half a year to reach bedrock in Gusev Crater. Now, Spirit’s initial inspection of an outcrop called “Clovis” suggests that water may once have been active at Gusev.

“We have evidence that interaction with liquid water changed the composition of this rock,” said Dr. Steve Squyres of Cornell University, principal investigator for the science instruments on both rovers.

For more details, visit <http://marsrovers.jpl.nasa.gov>.

Genesis prepares for copter catch

By DC Agle



In a dramatic ending that marks a beginning in scientific research, JPL’s Genesis spacecraft is set to swing by Earth and jettison a sample return capsule filled with particles of the Sun that may ultimately tell us more about the genesis of our solar system.

On Sept. 8, the drama will unfold over the skies of central Utah when the spacecraft’s sample return capsule will be snagged in midair by helicopter. The rendezvous will occur at the Air Force’s Utah Test and Training Range, southwest of Salt Lake City.

“What a prize Genesis will be,” said Genesis Principal Investigator Dr. Don Burnett of Caltech. “Our spacecraft has logged almost 27 months far beyond the moon’s orbit, collecting atoms from the Sun. With it, we should be able to say what the Sun is composed of, at a level of precision for planetary science purposes that has never been seen before.”

The prizes Burnett and company are waiting for are hexagonal wafers of pure silicon, gold, sapphire, diamond and other materials that have served as a celestial prison for their samples of solar wind particles. These wafers are now safely stowed in the return capsule. If the capsule were to descend all the way to the ground, some might fracture or break away from their mountings; hence, the midair retrieval by helicopter, with crew members including some who have performed helicopter stunt work for Hollywood.

“These guys fly in some of Hollywood’s biggest movies,” said Genesis Project Manager Don Sweetnam of JPL. “But this time, the Genesis capsule will be the star.”

The capsule—carrying the agency’s first sample return since the final Apollo lunar mission in 1972 and the first material collected beyond the

moon—will enter Earth’s atmosphere at 9:55 a.m. Mountain Time. Two minutes and seven seconds after atmospheric entry, while still flying supersonically, the capsule will deploy a drogue parachute at 33 kilometers (108,000 feet) altitude. Six minutes after that, the main parachute, a parafoil, will deploy 6.1 kilometers (20,000 feet) up. Waiting below will be two helicopters, each with flight crews of three.

“The lead helicopter will deploy an 18 1/2-foot pole with what you could best describe as an oversized, Space-Age fishing hook on its end,” said Roy Haggard, chief executive officer of Vertigo Inc. and director of flight operations for the lead helicopter. “When we make the approach we want the helicopter skids to be about 8 feet above the top of the parafoil. If for some reason the capture is not successful, the second helicopter is 1,000 feet behind us and setting up for its approach. We estimate we will have five opportunities to achieve capture.”

The helicopter that does achieve capture will carry the sample canister to a clean room at the Michael Army Air Field at the U.S. Army Dugway Proving Ground, where scientists await their cosmic prize. The samples will then be moved to a special laboratory at Johnson Space Center, Houston, where they will be preserved and studied by scientists for many years to come.

“I understand much of the interest is in how we retrieve Genesis,” added Burnett. “But to me the excitement really begins when scientists from around the world get hold of those samples for their research. That will be something.”

More detailed background on the mission is available at <http://genesismission.jpl.nasa.gov>.

News Briefs



Brian Muirhead

Muirhead named Chief Engineer

Former Mars Pathfinder Project Manager BRIAN MUIRHEAD has been named to lead JPL's newly formed Office of Chief Engineer.

- The office's responsibilities include:
- Representing JPL to the NASA Chief Engineer and the Chief Engineers at the other NASA centers
 - Chairing the new JPL Engineering Board, which will consist of the directorate and division chief engineers
 - Advising the JPL Engineering and Science Director on engineering issues
 - Advising the JPL Director, Deputy Director and Associate Director for Flight Projects and Mission Success on project risk issues.

Directorates reorganized

JPL has reorganized the Mars Program Office, the Planetary Flight Projects Directorate and the Solar System Exploration Programs Directorate. The Planetary Flight Projects Directorate (Organization 400) has been renamed the Solar System Exploration Directorate and will have formulation, implementation and operations responsibility for Cassini and all competed solar system missions. CHRIS JONES will continue as the director. DR. JOHN MCNAMEE has been appointed deputy director as an additional duty and will assume this role full time once the transition of the Discovery/New Frontiers Program Office is complete.

The Solar System Exploration Programs Directorate (Organization 600) will be renamed the Mars Exploration Directorate and will have formulation, implementation and operations responsibility for all Mars missions. Organization 150, the Mars Exploration Program Office, has been disbanded and its functions absorbed in the new Mars Exploration Directorate. DR. FIROUZ NADERI continues as director and DR. FUK LI continues as deputy director.

NASA training site debuts

The newly-launched NASA Engineering Training (NET) Web site at <http://net.larc.nasa.gov> provides engineers with information and links to the training and career-development resources necessary for success. The site also serves as a forum for news, discussions, lessons and strategies. The site provides information (sponsored by NET through NASA Headquarters) about the engineering training that is available to the NASA engineering community, including a comprehensive list of all NET courses, course descriptions and class schedules. Future features will include information on career growth opportunities, training workshops and conferences, discussion groups, a "course workshop" area and an online subscription engineering newsletter.

Special Events Calendar

Ongoing Support Groups

Alcoholics Anonymous—Meets Wednesdays at 11 a.m. in Building 125-B16A.

Caregivers Support Group—Meets the first Thursday of the month at noon in Building 167-111 (the Wellness Place).

Codependents Anonymous—Meets at noon every Wednesday in Building 111-117.

Lambda (Gay, Lesbian, Bisexual and Transgender Networking Group)—Meets the first Friday and third Thursday of the month at noon in Building 111-117.

Parents Group for Children With Special Needs—Meets the second Thursday of the month at noon in Building 167-111 (the Wellness Place).

For more information on these groups, please contact the Employee Assistance Program at ext. 4-3680.

Monday, August 30

"Leadership & Communication With A Diverse Team"—Join Lucky Altman, executive director for the National Conference for Community and Justice, Los Angeles region, at noon in Building 180-101. Her talk will cover ensuring welcome environments for contributions from everyone, developing an inclusive work environment, what to do when a biased statement is made in a meeting and honoring differences.

Tuesday, August 31

Weight Watchers at Work—An orientation meeting will be held at 11:30 a.m. in Building 79-16 for those considering joining the on-Lab series or the online program. For more information, visit <http://eis.jpl.nasa.gov/hr/esr/wellness/wwatchers.htm>.

Wednesday, September 1

Associated Retirees of JPL/Caltech—Meeting at 10 a.m. at La Cañada

United Methodist Church, 104 Berkshire Place, La Cañada.

JPL Library Orientation—Come to Building 111-104 at 11:30 a.m. for an overview of the Library's products and services, and learn how to access numerous electronic resources from your desktop. For more information, call the reference desk, ext. 4-4200.

Thursday, September 2

JPL Gun Club—Meeting at noon in Building 183-328.

Tuesday, September 7

JPL Gamers Club—Meeting at noon in Building 301-227.

JPL Genealogy Club—Meeting at noon in Building 301-271.

Wednesday, September 8

JPL Amateur Radio Club—Meeting at noon in Building 238-543.

JPL Library Orientation—Come to Building 111-104 at 11:30 a.m. for an overview of the Library's products and services, and learn how to access numerous electronic resources from your desktop. For more information, call the reference desk, ext. 4-4200.

JPL Toastmasters Club—Meeting at 5 p.m. in conference room 167. Call Dirk Runge at ext. 3-0465 for information.

Thursday, September 9

Clogging Class—Meets at noon in Building 300-217. For more information, call Shary DeVore at ext. 4-1024.

Friday, September 10

Caltech Folk Music Society—Singer/songwriter Michael Smith will appear at 8 p.m. in Beckman Institute Auditorium. Tickets are \$15 for adults and \$5 for children under 12. For more information, call (626) 395-4652 or visit <http://www.folkmusic.caltech.edu>.



Dutch Slager / JPL Photolab

Managers and officials join the engineering team on the Mesa for the dedication commemorating the installation of the first array-based DSN 6-meter breadboard antenna.

Array antenna dedicated

An Aug. 12 ceremony on the Mesa marked the installation of a new 6-meter-diameter antenna, one of two that will be used in the next year in conjunction with a 12-meter-diameter antenna, all located at the Oak Grove complex, to create a three-element breadboard communications array. The Microwave Array Project for the Deep Space Network is developing an operational concept, plan and low-cost technologies to increase its overall signal reception capability by orders of magnitude, said Mark Gatti, the project's lead systems engineer and deputy manager of the Communications Ground Systems Section 333. "The current concept is to construct three clusters, each of 400 low-cost 12-meter-diameter antennas," Gatti said. Each cluster will be located at three longitudes around the Earth, as are the three DSN facilities in Goldstone, Madrid and Canberra. "This system, operating at frequencies four times greater than currently used, will provide a total performance increase of 40 times that provided by the system of 70-meter diameter antennas," Gatti added. The breadboard array—with two 6-meter antennas on the Mesa antenna range, a 12-meter antenna located above Building 245 on Mesa Road, and eventually one 6-meter antenna on the Caltech campus—will be used to develop both the technologies associated with arraying a large number of antennas for deep-space communications, as well as low-cost manufacturing methods required to construct this system in a cost-effective manner. Activities associated with the breadboard will be planned for the next two years, Gatti said. "Expected to be completed by 2013, the array will provide the foundation for the future of the DSN, allowing greatly increased capacity for science missions through the following 30 years."

For the period of June through July 2004 the following JPL recipients celebrated 25 or more years of service and were invited to attend a luncheon and ceremony in their honor on Aug. 3.

45 years: L.J. Zottarelli.

40 years: Allan Eisenman, Richard Horttor, Samuel Petty, James Randolph.

35 years: Stewart Collins, Larry Dean, Manuel Franco, Krista Kelly, Robert Koukol, Robert Sniffin, Thomas Thorpe.

30 years: Richard Cowley, Dorothy Crawford, Arvid Croonquist, James Erickson, John Gieselman, James Graf, Deborah Johnson, Rigoberto Medina, Diane Newmark, R. Frank Tiltman, Paul Weissman.

25 years: Gajanana Birur, N.T. Brady, Lonny Ching, Leslie Compton, Glenn Cunningham, David Durham, Daniel Eldred, Keith English, Carol Glazer, Hamid Habib-Agahi, Candice Hansen, Michael Jones, Catherine Lemaster, Terry Martin, John Miranda, Fred O'Callaghan, Mark Romejko, Robert Sible, Ilene Steen, James Steppe, Victor Vilnrotter.



Service awards

Mars software honored by NASA

NASA has selected a data visualization and simulation software package used by Mars rovers and landers, and a software package that can be used in aerospace and industrial flow fluid applications, as the "best of the best" software developed by the agency this year. The "Science Activity Planner," developed by a team of experts at JPL, combines cutting-edge visualization with sophisticated planning and simulation capabilities to provide an intuitive interface to Mars rovers and landers. It is a multi-mission, multi-purpose tool that has achieved three simultaneous successes in mission operations, public outreach and technology development. The software comes in two versions. The first is used in mission operations and contains the official mission activity dictionary. The second version was released under the name "Maestro" to the public for education and outreach. Maestro includes additional training features that make it a more effective tool for public engagement. Every day, mission scientists and engineers on the Mars Exploration Rover mission depend on the Science Activity Planner as their primary interface to the Spirit and Opportunity rovers. They use it to plan the next actions of the rovers and analyze the data arriving from Mars. The software has completed more than 360 Mars days of successful mission operations of the Spirit and Opportunity rovers without a single critical failure and will continue to serve this role until the end of the mission. "We are thrilled to receive this award and honored to have been a part of the amazing team behind the Mars Exploration Rover mission," said Jeff Norris, the software team leader at JPL.

NASA also selected the TetrUSS 2004 software as an award winner. TetrUSS 2004 is a suite of computer programs used for fluid dynamics and aerodynamics analysis. Originally developed for NASA internal applications, TetrUSS 2004 has evolved into an efficient and versatile computer fluid dynamics tool used by engineers and scientists throughout the nation. The software is widely used in other government organizations, the aerospace industry, academia and non-aerospace industries such as automotive, bio-medical and civil engineering. NASA began the competition in 1994, designed to reward outstanding software at the agency, as measured by the science and technology significance of the software and its impact on NASA's mission; the extent of current and potential use; the software's usability; the quality factors considered in the software; intellectual property factors such as patents and copyrights; and innovation of the software. Software eligible for this award must have NASA intellectual property interest, be of commercial grade and be available to appropriate commercial users or dedicated to a NASA mission. For more information, visit <http://icb.nasa.gov/nasaswy.html>.



Lab welcomes new HR director

BY MARK WHALEN

What brings you here? What attracted you to JPL?

I have seen JPL from the vantage point of being a member of the local community and for many years have heard of its reputation as a great employer. Like ARCO, JPL is known for its community and educational outreach, and for its employee-friendly culture. I am attracted to the challenge of working in one of the world's most prestigious scientific research and development centers.

Coming into the job, do you have any particular goals?

I come in with the belief we're at a good starting point. JPL is a great employer, it is a great friend of the community, and it attracts world-class talent. I hope to build on that legacy in creating an environment where everyone can contribute to their fullest.

A lot of companies say that people are their greatest assets. Here, I believe it is absolutely true. Through its people, JPL has proven it can create technology that doesn't currently exist and repeatedly conduct successful missions. Their talent will continue to create the future. But that talent is being competed for by private industry and other entities, and my goal is to have JPL continue to attract, develop and retain the best people.

We're competing for a limited resource with industry in general, especially in the hard sciences—math and computer science. I believe there is a portion of the population that would only work in a JPL-type organization. But there are other disciplines in which we are competing head-to-head with private industry and government. It will become increasingly more important for us to develop programs and processes to attract the best talent and provide meaningful development programs to ensure we allow individuals to be fully engaged and develop to their fullest potential.

I have a passion for diversity and inclusion. I believe if employees have a high level of satisfaction with their work environment and are fully engaged and committed to the organization's success, we will continue to attract top talent and reflect the diversity of our various recruiting sources.

Why was the new Human Resources Directorate created?

There is a desire on the part of senior management to make Human Resources a more visible part of our organization. We want to better position the Human Resources function and the development of our people in a more strategic way.

The Lab has emerged from an era of fewer, long-term projects to many projects in development at the same time. That creates greater complexity and requires a more strategic look at how we deploy our human capabilities. It affects the talent pool available to project managers, as well as individuals' own career development opportunities.

LAST MONTH, COZETTE HART JOINED JPL AS DIRECTOR FOR THE NEWLY FORMED HUMAN RESOURCES DIRECTORATE. SHE IS A MEMBER OF THE EXECUTIVE COUNCIL, REPORTING DIRECTLY TO THE LAB DIRECTOR AND DEPUTY DIRECTOR.

HART'S EXPERIENCE INCLUDES 15 YEARS WITH ATLANTIC RICHFIELD, WHERE SHE HELD A SERIES OF HUMAN RESOURCES MANAGERIAL POSITIONS OF INCREASING RESPONSIBILITY WITH ARCO CORPORATE AND SUBSIDIARY COMPANIES. ARCO WAS ACQUIRED BY BRITISH PETROLEUM IN 2000, AND WITH THAT MERGER SHE ULTIMATELY ASSUMED RESPONSIBILITY FOR LEADING THE HUMAN RESOURCES FUNCTION FOR BP'S U.S. CONVENIENCE RETAIL ORGANIZATION, ENCOMPASSING MORE THAN 19,000 EMPLOYEES ACROSS THE UNITED STATES.

PREVIOUSLY, SHE PROVIDED HUMAN RESOURCES CONSULTING SERVICES TO MORE THAN 200 HOSPITALS IN SOUTHERN CALIFORNIA FOR THE HOSPITAL COUNCIL OF SOUTHERN CALIFORNIA.

What are some of the biggest challenges in your organization?

Staffing is a critical area. We have about 1,600 transactions annually including hires, transfers and status changes. It's a continuous challenge for us to source the talent needed for current and future projects and we need to do that in the most efficient and effective ways.

The recently launched "JPL Jobs!" online search tool is a good example of trying to make that process more accessible and easier for our employees. It is also important for us to create and leverage existing relationships with universities to underpin our efforts in campus recruiting. We want to make sure we get access to the top students and ensure we have a coordinated approach in attracting them to JPL.

The Compensation area is near and dear to all of us—for both prospective and current employees. This includes the challenge of motivating and rewarding people in the best and most appropriate ways while remaining competitive with the market.

Succession planning is another key area. We need to ensure we are developing the capabilities to meet the needs of the future—in technical skills; project proposal, development and management; and in leadership competencies.

In your career, what's the most significant issue you have worked on or supported for the benefit of your employees?

I'm not sure I can name one significant issue. The way I approach Human Resources is to bring the components of the Employee Life Cycle (resourcing, performance management, learning and development, reward, career progression and succession planning) in cohesive support of the overall business strategy.

What are your first impressions of JPL?

First of all, I'm impressed with the open and collegial environment that exists here. While it is an explicit value, it is also apparent that it is very ingrained in the culture and is one of the contributing factors in making JPL a great place to work.

People have been very warm and multiple people have said, "Welcome to the JPL family."

I feel I'm coming here at a great time. People are excited about what's happening now, and about their future. I've met employees who have been here for many years and I'm impressed with the pride they have in contributing to the history of this place and that they continue to be excited about the contributions they are making to the science community and the world at large.

Agency dialogues continue

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Durch Stager / JPL Photolab

JPL Director Dr. Charles Elachi (center), who also serves as NASA's Director of Advanced Planning, joined moderator Johnny Stephenson (left), the One NASA Implementation Team Lead, and Kevin Petersen, director of Dryden Flight Research Center, at a NASA Transformation Dialogue broadcast from JPL on Aug. 20. They discussed competition vs. collaboration—dealing with mixed messages and when it makes sense for centers to compete and collaborate more. To view the archived webcast, visit http://insidenasa.nasa.gov/nasa_nas/ops/NASA_transformation/NASA_trans_webcast_arch.html.

Letters

My family and I would like to thank all of my co-workers and friends who extended their love and support in the recent passing of my beloved father-in-law. Your kind words, cards and flowers meant a lot to us during this difficult time. I would also like to thank JPL and ERC for the beautiful plants. Last January, I also lost my beloved father. I fear that I may have forgotten to thank my friends at JPL and ERC for their thoughts, cards, flowers, plants and comforting words. Please accept sincere appreciation from us.

Shu-Chen (Susan) Lee

Thank you, JPL, for the lovely plant sent to my home in memory of my mother. To my JPL friends and co-workers, thank you for the beautiful flowers, for your thoughtfulness, prayers, and for your words and cards of sympathy on the passing of my mother last month. With sincere appreciation,

Merideth Fiore

Retirees

The following JPL employees retired in August:

Saterios Dallas, 45 years, Section 310; Raymond Prizgintas, 42 years, Section 366; Frank Surber, 31 years, Section 311; Joanne Mintz, 30 years, Section 3193; Claudia Romain, 26 years, Section 3193; Robert Mcmillan, 25 years, Section 3493; Francis Schneider, 16 years; Inez Mikulski, 15 years, Section 512; Maximo Cortez, 14 years, Section 351; Marilyn Davis, 14 years, Section 420; Robert Heimlich, 13 years, Section 2524.

Classifieds

For Sale

AIR CONDITIONERS, for window, 18K BTU, ~\$150; 8K BTU, ~ \$100; MICROWAVE, small, \$75. 249-2669.
BEDROOM FURNITURE, girls', antique white headboard, 5 pcs., twin 4-poster bed, computer desk w/hutch & nightstand, will sell separately or as a set, \$500 for set. 249-4053.
BICYCLE, road, Cannondale R400, 60 cm frame, RSX components, decent cond., drive train could use a little work, \$290/obo. 315/450-3309, Jason, or jaystock@umich.edu.
BICYCLE, Schwinn 5-spd tandem, red, good cond. (some rust), + saddlebags and pump, \$150. 248-8619.
CAMERA, Nikon digital, Cool Pix 5700, 35-280mm zoom-Nikkor lens, 5-area multi auto focus, Macro shooting to 1.2 in., matrix metering, magnesium alloy body, electronic viewfinder, vari-angle LCD, built-in spd. light, accessory shoe for external flash, movies w/audio, NiMH battery/charger, 256Mb compact flash card, exc. cond., \$450. 626/332-7305.
CLOTHES, infant: jacket, red/navy blue, zip-up w/hood (Old Navy), size 2T, exc. cond., \$5/obo; sweater, sky blue w/navy trim, buttons, size 3T, \$1/obo; zipper shoes, Spongebob motif, size 11M, exc. cond., \$5/obo; photos avail. 626/791-6101.
COMPUTER, Pentium II, 300 MHz, 128 MB RAM, 3 GB HD, Win 98, \$100/obo; Radius 17" monitor, \$75; Cambridge speakers, \$10; keyboard + mouse, \$5; all for \$175. 626/282-5815.
COMPUTER DESK, on wheels, cherry veneer, made by O'Sullivan, model 61925, exc. cond., like new; sell for best offer. 626/449-0997.
COMPUTER DESK, corner unit, exc. cond., shelves on both sides, light color, pressed wood, \$100. 848-2214, Karen or David.
COMPUTER MOTHERBOARD, ABit KV8-MAX3 for Amd Athlon 64 CPU (socket 754), not included. 281-7745 or 248-0638, Chris.
CURIO CABINET, Asian style, rosewood, 5 shelves, beveled glass doors and sides, mirrored back, lighted, 2-shelf storage cupboard on bottom, 78" H x 38" W x 14" D, exc. cond., photos available, \$200. 323/257-7928.
DIN. RM. SET, Spanish revival table & 8 high-back chairs, exc. cond., \$1,200. 626/794-3906.
DODGER TICKETS, up to 4 seats in Loge 164, row J, from my season ticket package, available for most remaining games, \$14 ea.

542-9828 or kimandgene@earthlink.net.
DODGER TICKETS, selected games from season ticket pkg., Loge level (orange), Aisle 132 (at 1st base), 2 tickets/gm, at face value of \$30/ticket, see www.delunac.net/tickets. 626/296-1253 for details, avail. games.
ENCYCLOPEDIA SET, 1976 edition with updates, \$35/obo. 626/797-1310.
EXERCISE EQUIP.: one 5 ft. barbell, 2 dumbbells, all w/collars & sleeves; plate weights, 200 lbs., various sizes; combination bench press/squat rack, all for \$125. 248-7664.
FREEZER, upright, medium size, works great, \$50. 626/574-1495.
FURNITURE, ornately carved Spanish oak desk & 2 matching bookcases, \$650; Techline office furniture in white (6 pieces), \$400; several mirrors, Spanish hand-made rug, orange & pink, \$250; mission style oak server, \$350. 626/584-0860 or 626/794-3144, Donna.
KIDS POOL, Little Tykes, blue, hard plastic, outer dia. 5', water area 4' dia. & 1' D if filled to brim, small integral slide, drain plug, \$30. 626/303-1927.
LUMBER: white oak FAS, 4/4, \$3 bd. ft.; cherry \$5; also 1C and thickness to 16/4. 626/798-5110.
MISC: calculator, HP49G, w/manual, \$40; chess/checkers set, glass, 14" x 14" board, \$10; stereo amplifier, Kicker Impulse 352xi, w/two 8" subwoofer speakers, \$75. 626/807-7756.
MISC: Nokia 1260, \$40; Radio Shack plug-in intercom system, \$40; diamond ring, \$90; Suunto S6 wristop computer, \$250; Water Pure system, \$45; Memorex walkman, \$40; Sony am/fm tape player (small), \$40; canvas lounger, \$15; Ozark Trail portable queen frame and mattress, \$40; GE answering machine, \$35; fountain (table top), \$20. 897-1203.
MISC: pool table, 8', \$500; tablecloths, 2 slate blue oval, 18 matching napkins & rings, \$10; bunk bed, \$50; mailbox, oversized, green, \$20; wig, red, shoulder length, never used, \$20; generator, needs repair, \$10; electric frying pan, \$10; answering machine, \$5; basketball set, portable, needs net, \$200; fishing pole, saltwater, \$25. 626/357-8210.
MISC: loveseat, blue, \$100; computer table on wheels, \$20; floor lamp, 6', xenon, black, \$20; small chest of drawers, \$20; toaster ovens, \$6/ea.; bicycles (3), 10-speed, need work, \$50 each/obo. 626/282-5815.
MOUNTAIN BIKE, Trek, 13.5" frame w/26" tires (small frame w/full-size wheels), 18 gears w/grip shift, cyan/indigo color, gd cond., \$100. 952-8455.
PIANO by Hobart M. Cable, small, upright, exc. cond., buyer arranges pickup in Simi Valley, \$550/obo, down from \$750. 805/660-7446, Ben Bronwein.
REFRIGERATOR, Hotpoint, 16 cu. ft., gd. cond., runs well, \$150. 626/794-5484.
SECTIONAL, 2-piece, Bassett (1 pc. is a sleeper), floral print, photo & dimensions available, cushions need new covers, rest in vg cond., \$250/obo. 626/791-6101.
SHOES, Birkenstocks, size 39R, Granada white and Granada with ankle strap, white and black pairs, like new, \$30 ea. 243-8255.
SKI RACK, for Subaru Legacy wagon 2000 or later, with mounting hardware, locks, \$40. 626/797-6121, Steve.
TELEVISION, JVC, color, 27", w/remote, works great, \$50. 626/836-4960.
THERAPY MACHINE, HYS-398, digital, used a few times, Chinese/English user's manual, apply microcurrent for acupuncture, massage, manipulation, etc., \$200/obo. 626/840-0955, leave msg.
TROMBONES: Bach, exc. cond., like new, \$695/firm; Yamaha, gd. cond., \$495 firm; STROLLER, Aprica, teal green, was \$350, now \$95. 626/850-4378.
WASHER & DRYER, Maytag, extra-heavy duty capacity, \$50/ea. 626/437-2355.
WALKER by Invacare, dual-release w/3" fixed whls., model# 6291-3f, lightwt, height adjustments, ergonomic folding mechanisms, 300 lb. capacity, lifetime warranty, barely used, almost-new cond., sell for \$50 (new \$130); Invacare commode also avail. 714/280-7368.
WASTEBASKET, white, plastic w/metal guide rail, about 1 x 2 x 3 ft. tall, installs inside kitchen cabinets to hide trash, brand new, in orig. box with screws for installation, \$80/obo. 626/840-0955, leave msg.

Vehicles / Accessories

'94 GEO Prizm, 1.6 L, 4-dr., 5 speed, 124K mi., gd. cond., \$2,000. 626/786-8136.
'92 HONDA Accord EX, 182K miles, 4 door, CD player, excellent condition outside/inside, \$2,800/obo. 626/305-0742, Elsa.
'81 HONDA Civic wagon, 4 door, automatic, gd. cond., great transportation, \$1,000. 626/791-0486, Dave.
'00 LEXUS ES300, automatic, leather powered seats, moonroof, CD changer, metallic two-tone black, power everything, exc. cond., 29K mi., \$19,500. 909/630-5176.
'93 MERCURY Sable GS, automatic wagon, 4 dr., V6, 3.8L, silver, second owner, very gd. cond., regular maint., 120K, \$1,800/obo (KBB \$2,100). 626/304-9249.
'87 NISSAN Sentra, 2 dr., auto trans, 84K mi., new CD player, a/c, pwr. steering/brakes, red, runs well, well-maint., \$1,200/obo. 323/254-8415.
RUNNING BOARDS for '04 Ford Escape, never used, \$100. 952-7940, Mickie.
SERVICE MANUAL for '91 Jeep, 3-book set, \$15. 626/448-4383.
'99 TOYOTA Camry XLE, loaded, V6, CD player, moonroof, power leather seats, auto, 50K mi., exc. cond., \$11,500. 909/599-3230.
'00 VW Jetta GLS, black leather seats, air-bags, am/fm/cass./CD, box, pwr. window/locks/seats/mirrors, cruise control, sunroof, seat heater, auto, 6 cyl., 4 dr., 2WD. Maria@thoughtsquad.com.

Free

BRICKS, red, 1,000's, used, 310/541-3553 or 626/744-5576.
CLICKER for '90 Ford Escort. 548-1312, Ray.
DOG, to a gd. home, Apple, 1-1/2 yr. old German Shepard mix, all shots, neutered, owner is moving and can't take her, gd. w/kids and is just a darn gd. dog, please save her from a life of loneliness, photos avail. 504-6232.
FENCE BOARDS, grape-stake, cedar, several hundred, mostly 2 wide x 5 1/2" L. 626/794-0455.
KITTEN, 4-mo.-old male, orange and white, loves people and other cats, to gd. home. 653-7840, Cheryl.
KITTENS (2), cute, 4 mo. old, fixed and have shots, to good home. 443-1826, Janice.

Lost & Found

FOUND: NEC gray remote control, in 238-544 conf. rm. Ext. 4-2077.
FOUND: small Strada case, cloth and leather, street near Bldg. 158/278, 4-7396, Bill.
LOST: 32K MMC (Multi Media Card) in vicinity of Bldg. 125 on Aug 9. 625-9964.

Wanted

BOOKS, used/new, paperback or hardback, or magazine, romance, science-fiction, mystery, etc. 248-0178, engineerbob4449@yahoo.com.
BOXES, cardboard, for moving. 626/574-1495.
GLIDER, gently used Dutilleul with or without ottoman. 626/799-1096.
MATH TUTOR, Jr. & Sr. high school level geometry, pre-algebra, algebra I & II, SAT math, etc. evens. and/or weekends. 888/784-1639, David, please leave msg.
PIANO LESSONS for 11-year-old girl, San Fernando Valley, once a week. 686-0095.
SOFTWARE, Microsoft Windows '98 Install Disk (full install w/serial). 653-9282, Steve.
SPACE INFORMATION/memorabilia from U.S. & other countries, past & present, for personal use. 790-8523, Marc Rayman.
STORAGE RENTAL, secure 10 x 10 or garage in Pasadena/Glendale/Tujunga/Sunland/Sylmar areas. 956-3223.

For Rent

ALTADENA "sabbatical house," 3 bd. + study, boundary Angeles Forest, 3 mi./JPL (trails to Lab behind house), view, hardwood floors, antiques, completely furn.: dinnerware, utensils, pots/pans, linens/towels, fine soaps, necessities included, just bring toothbrush & clothes, TV/DVD/VHS, Dish satellite, wireless DSL, garden, fruit trees, BBQ, parking, private, immaculate, avail. Oct. 626/798-3235, info/visit.
ALTADENA, 3 bd., 1.5 ba., character home to share, 2 mi. from JPL, just off Loma Alta, close to mtn. trails, beautiful hardwood floors throughout, fireplace, dining rm., mtn. view, 2-car garage, non-smoker, pets negotiable, month-to-month lease avail., \$700, util. incl. 626/818-5064, Dan.
LA CANADA, townhouse-style apt., 2 bd., 1 3/4 ba., large, quiet, central h/ac, gated, off-street parking, 10 min. from JPL, \$1,500. 952-7490, Frances.
NE PASADENA guest house; must see, very attractive; new carpet & freshly painted; cross streets Mountain/Allen, near 210 freeway, bus 1/2 block away; a/c, stove, ref. & dishwasher, lots of closet & cupboard space; secured parking, fenced yard, safe, quiet & clean; no pets; \$1,100. 626/791-8313.
PASADENA, easygoing, non-smoker house-mate wanted, small bd. in 4-bd. house, walking dist./JPL, 2 blocks, central air/heat, fireplace,

patio & backyard, laundry & kitchen privileges, no pets, off-st. parking: \$600 + \$300 deposit, util. incl. 626/807-0699, Myr.
PASADENA, spacious very private rm. + private ba. in condo, great location nr. Caltech, quiet, very clean, large closets, shared kitch./liv. rm., lg. balcony/nice view (green trees), gated security garage, laundry in building, quiet male preferred, \$530 + \$35 util. 626/796-9221.
PASADENA, SW, 1 bd., 1 1/2 ba., 3rd floor, 900 sq. ft., newly remodeled (beautiful kitchen with loads of storage), close to Gold Line, Paseo, walk to Lake Ave./Old Town shopping, mtn. vw., avail. 10/1, \$1,250. 626/577-2882.
PASADENA, luxurious tri-level townhouse, 301 Wallis St., cathedral ceilings, 2 skylights give spacious feeling; 2 bd., dressing rm with skylight; white marble entry, living rm. w/fire-place, formal dining rm., 1-1/2 ba., a/c, laundry area, storage, shelves, hookups, dishwasher, stove, garden window, priv. patio; 2-car enclosed garage; 3 fwys. close; safe, quiet; no pets; \$1,700. 626/791-8313.
SUNLAND, 2 + 2, very nice, extra lg., all new, 6-unit building, patio, 5 closets, kitchen hardwood cabinets with built-in appliances, quiet, dishwasher, \$1,275. 248-7610.
TEMPLE CITY house, 2 bd., 1 ba., Arcadia schools, large yard, \$1,325 + \$1,200 sec. 241-0586, 6-9 p.m.
TUJUNGA house, 15 min./JPL; 2 bd., 1 ba, 1 1/2-car gar., remodeled ba., oak cabinets throughout; stove, dishwasher, washer & dryer, soft water and gardener; pics at <http://users.adelphia.net/~krfields>><http://users.adelphia.net/~krfields>; \$1,275. 877/312-4654, pager.
TUJUNGA, super clean, 3 bd. family home, high above Foothill, exc. neighborhood, adj. to La Crescenta, 5 min./JPL, priv. yd. equipped w/patio, deck w/spa, auto sprinklers, spacious family rm., new carpet, paint, stove, washer/dryer, attached 2-car garage, RV parking, gardener paid by owner, \$1,800 + sec. deposit, avail. 9/15. 249-8061.

Real Estate
LA CANADA home, by owner, 1 min. from JPL, 3 bd., 2 ba., LR, FR + 1 bd., 1 ba. for in-law or nanny, newly landscaped, backyard play-house, oak, gate to trail and JPL, sewers, 2,339 sq. ft., \$935,600. 790-5593.
TUJUNGA, fabulous view home w/guesthouse on 3/4 acre shaded hilltop lot, 2 bd., 1 ba., plus 1 bd., 1 ba., guesthouse, recently remodeled, new copper/electrical, central heat/air, 2-car garage, carport, 15 min. from JPL, super quiet & private. 952-7980, Dave.

Vacation Rentals
BIG BEAR LAKEFRONT luxury townhome, 2 decks, tennis, indoor pool/spa, beautiful master bd. suite, slps. 6. 949/786-6548.
BROOKINGS, Oregon, 3 bd., 2 ba., 1,700 sq. ft. Moosehead Lodge residence, fully furn., sleeps 2 to 12 at the Winchuck River Estuary, walk the Winchuck or Pelican Bay beaches w/tidepools, surf & driftwood, fish the Pacific for salmon, albacore, bottom fish or crabs; salmon or steelhead up the wild rivers along Southern Oregon and Northern Calif. coast, enjoy the Redwoods and Siskiyou Nat'l Forest. 800/221-8175.
CAMBRIA house, ocean front, exceptional white water view, accom. up to 4 people, all amenities provided. 702/256-1359, ereynolds2@cox.net.
DEL MAR timeshare, Wavecrest RCI Gold Crown, studio, sleeps 2, ocean view, Sept. 10-17, '04, see to appreciate, www.wavecrestresort.com, \$750/wk. 626/233-9612 or 626/794-7359, Camille.
FLORIDA condo on the surf of New Smyrna Beach, beautifully furn., 2 bd., 2 ba., full kitchen, half-hour to Cape Canaveral, 90 min. to Disney World, enjoy all comforts of home in a quiet, relaxing, overlooking beach + ocean, BBQ, pool, game rm., easy walk to stores and restaurants. 760/439-7821, Darlene or dfhauge@yahoo.com.
HAWAII, Maui condo, NW coast, ocean front view, 25 ft. fr. surf, 1 bd. w/loft, compl. furn., phone, color TV, VCR, microwave, d/w, pool, priv. lanai, slps. 4, laundry fac., low season rate \$115/nite/2, high season \$130/nite/2, \$15/nite/add'l person. 949/348-8047, jackandrady@cox.net.
MAMMOTH, Snowcreek, 2 bd., 2 ba., + loft, slps. 6-8, fully equip'd kitch. incl. microwave, D/W, cable TV, VCR, phone, balcony w/mtn. vw., Jacz., sauna, streams, fishponds, close to Mammoth Creek, JPL disc'nt. 626/798-9222 or 626/794-0455 or valeriee@caltech.edu.
OCEANSIDE condo, on the sand, charming, 1 bd., panoramic view, walk to pier or harbor, pool/spa, game room, slps. 4. 949/786-6548.
RESORTS, 5-star Hyatt and Marriott, incl. Carmel, Tahoe, Sedona, Colorado Rockies, Florida & Puerto Rico; luxurious residential-style studios w/turn. Kitchenette, starting at \$480 for 7 nts.; Palm Springs, Orlando, Puerto Vallarta specials, studio w/full kitchen \$399 for 7 nts., 1 & 2 bds, with full kitchens; partial weeks also avail. 626/794-9579 or fivestaresorts@earthlink.net.
ROSARITO BEACH condo, 2 bd., 2 ba., ocean view, pool, tennis, short walk to beach on priv. rd., 18-hole golf course 6 mi. away, priv. secure parking. 626/794-3906.